

CASE REPORT

Atypical Kawasaki syndrome: how many symptoms have to be present?

Conrad Pfafferott, Alexander Wirtzfeld, Bernhard Permanetter

Abstract

A 20 year old woman with acute myocardial infarction exhibited a huge aneurysm of the left main coronary artery that was occluded by a large intraluminal thrombus. After exclusion of other vascular or systemic diseases, atypical Kawasaki syndrome was diagnosed. Other major symptoms usually required for this diagnosis were absent. As patients with Kawasaki syndrome in childhood are surviving longer, acute coronary symptoms may occur in young adults, and coronary aneurysms might be the only symptom of atypical Kawasaki syndrome.

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Keywords: coronary artery disease; myocardial infarction; atypical Kawasaki syndrome

Diagnosis of Kawasaki syndrome, as first described in 1967, requires the presence of five of the six major symptoms: septic temperatures not responding to antibiotics; conjunctivitis, mainly of both eyes; erythema of oral mucosa and pharynx, strawberry tongue; diffuse inflammation of both hands and often feet; polymorphous desquamative rash; acute non-purulent cervical adenopathy. The disease can also be diagnosed when coronary aneurysms are present in addition to four of these major symptoms.

The disease is mainly found in early childhood. The incidence per 100 000 children under five years of age varies in different countries: Japan, 80–100; Korea, 50; Germany and the USA, 8.¹ Death from myocardial ischaemia or arrhythmia occurs in 1–2% of patients.

During the past few years there have been several reports of patients with coronary aneurysms corresponding to changes in Kawasaki disease who did not exhibit the other required symptoms, they were described as having atypical Kawasaki syndrome. In atypical Kawasaki syndrome, which is mainly found in children younger than 6 months old, there is an increased mortality from coronary involvement.² In 1987 Sonobe and Kawasaki stated that the diagnosis of atypical Kawasaki syndrome, in addition to coronary aneurysms, required the presence of three to four of the

major symptoms.³ However, other authors included all patients who exhibited coronary aneurysms, even if fewer than four of the classic symptoms were present.^{4–5} We report a case of a patient who presented with coronary aneurysm but none of the other clinical symptoms.

Case report

A 20 year old female patient, who had never had any cardiac symptoms, was admitted to a nearby hospital four hours after sudden onset of precordial pain on 28 May 1992. She reported no major illness in the past. According to her former paediatrician, the only childhood disease was German measles with a generalised exanthema at the age of 6 years. At no time were high fever, cervical adenopathy, conjunctivitis, desquamation of the skin, enteritis or arteritis observed.

The electrocardiography showed a subacute anterior wall infarction. Intravenous thrombolysis with 1.5 million units of streptokinase in one hour was started immediately, and pain disappeared within 30 minutes. At 0400 on 29 May 1992 the patient again suffered acute intense angina pectoris and dyspnoea. The ECG showed ST segment elevation in the anterior leads. She was transferred to our hospital where a coronary angiography was performed immediately. The right coronary artery was dominant. The left main exhibited a huge aneurysm with thrombotic material and was occluded (fig 1). Recombinant t-PA (20 mg) was injected into the left main and angioplasty (PTCA) was performed. The vessel could be reopened, the remaining stenosis of the left main was < 30%. The left anterior descending and circumflex arteries were free from aneurysms or stenoses. The PTCA result was unchanged on 11 June 1992, left ventriculography demonstrated a large anterolateral infarction, the ejection fraction was 52%.

Using duplex sonography aneurysms of other major vessels could be excluded. There were no signs or laboratory data suggesting collagen diseases. The patient, who had received heparin continuously since admission, was put on phenprocoumon (INR 3.0–4.0). She was also treated with an angiotensin converting enzyme inhibitor and metoprolol. After discharge the patient was free from

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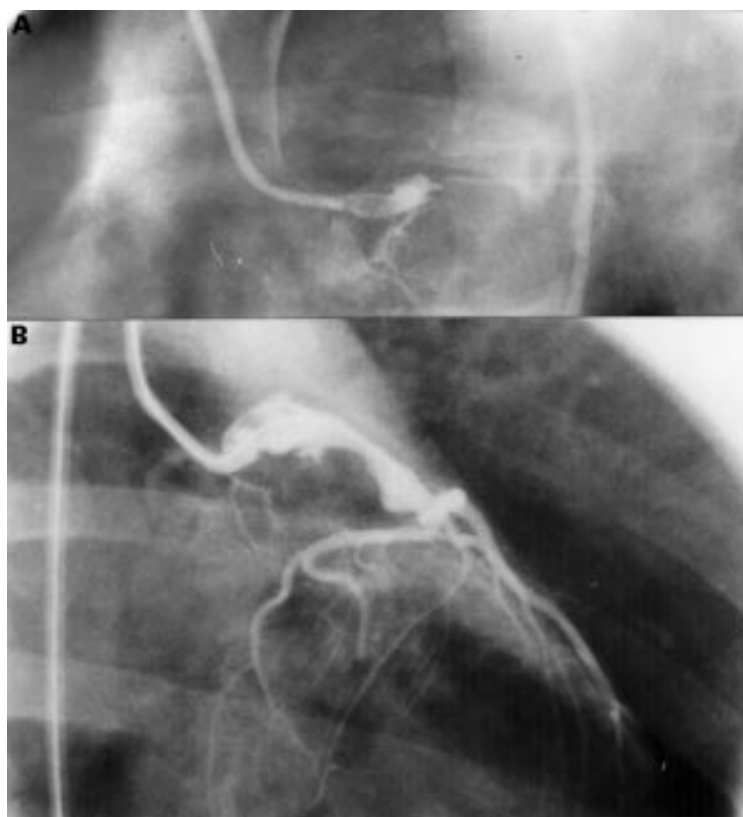


Figure 1 Left anterior oblique view with cranial angulation of the left coronary artery. On 29 April 1992 the left main was occluded initially (A). After thrombolysis (20 mg intracoronary rt-PA) and PTCA the vessel could be reopened, thrombotic material can still be seen in the proximal aneurysm of the left main (B, right anterior oblique).



Figure 2 Right anterior oblique view with cranial angulation of the left coronary artery. Control angiography on 2 January 1995 showed a giant aneurysm of the left main with a circumscribed dissection. Within three years stenosis of $\leq 75\%$ developed.

symptoms. Routine work could be carried out without any problems. No bleeding occurred. There were no major illnesses or any inflammatory disease in the meantime.

The patient was readmitted for control angiography on 2 January 1995. Left ventriculography showed an extensive hypoakinesia of the anterior and lateral wall. Ejection fraction was reduced to 39%. The right coronary artery was unchanged with no plaques or stenoses. The

left main, shortly after its orifice and directly in front of the known aneurysm, showed a progression of the pre-existing stenosis to $\leq 75\%$ (fig 2). The aneurysm was unchanged in size compared to 1992, it was free from thrombi. The left anterior and circumflex arteries were free from stenoses.

Discussion

Kawasaki syndrome, which, in the absence of typical laboratory parameters, is diagnosed according to clinical findings, exhibits cardiac involvement with aneurysms of the coronary arteries in 14–30% of patients.^{1–7} Sixty per cent of the aneurysms disappear after early drug treatment. Of the remaining 40% they persist unchanged, increase in size, or show partial or total occlusion or extensive irregularities.^{7–9} Aneurysms are frequently found in patients who, in the course of their disease, suffered from extremely high ($> 39.5^{\circ}\text{C}$) and long term (> 5 days) fever.¹⁰ All 21 patients, aged between 20 and 65 years, analysed retrospectively by Kato and colleagues, reported fever in their medical history.¹¹ Three or more of the classic symptoms were present in all patients. Of 109 further patients with coronary aneurysms in whom congenital, atherosclerotic or collagen vascular causes were excluded, an unspecified number also exhibited fever only for several days, but no other clinical symptoms.¹¹ The presence of coronary aneurysms is a prerequisite for the diagnosis of atypical Kawasaki syndrome, which, according to Sonobe and Kawasaki, can only be diagnosed, if at least four of the clinical criteria are present at the same time.³ Other authors require fewer than four major symptoms in addition to coronary aneurysms.^{4–5} Our patient did not exhibit any of the classic symptoms. She had suffered only one episode of generalised exanthema at the age of 6 or 7 years, which was then diagnosed as rubella. Other symptoms that might indicate Kawasaki syndrome, including long lasting fever, were never reported. Other diseases, such as collagenous tissue disease, measles, mononucleosis or bacterial infections that might be responsible for arteritis were excluded.

In the literature the age of patients suffering from atypical Kawasaki syndrome is reported to be between 2 months and 15 years.¹² There are only a few reports of adults with atypical Kawasaki syndrome in childhood.⁷ Jackson *et al* report 38 adults with Kawasaki syndrome in the Anglo American literature,¹³ and Olson *et al* report a case of a 36 year old man with a giant left main coronary artery, possibly an unrecognised case of Kawasaki disease.¹⁴

Because of typical aneurysm changes of the left main coronary artery and after exclusion of other diseases, we believe that our patient had atypical Kawasaki syndrome. The actual occurrence of the illness is unclear. There were no signs of acute atypical Kawasaki syndrome in 1992, therefore no specific treatment was necessary. It might well be that what had been described as rubella was indeed the exanthema

of Kawasaki syndrome. If this was the case, it appears to be of great interest that our patient remained asymptomatic for 14 years. After the myocardial infarction, however, a major increase in the stenosis of the left main occurred within three years. One could speculate that the reason for this progression might be coronary atherosclerosis, despite the age and sex of the patient. However, no other stenoses or even minor atherosclerotic changes were found in the other coronary arteries. Furthermore, all major cardiovascular risk factors could be excluded. Observations during the next years, as recommended by Dajani *et al.*,¹⁵ may show whether there are sudden changes in the disease.

Perhaps we should reconsider whether the diagnosis of atypical Kawasaki syndrome requires at least three or four of the classic clinical symptoms besides coronary aneurysms, particularly the presence of long lasting and high fever.

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SHORT CASES IN CARDIOLOGY

Intracoronary urokinase and post-thrombolytic regimen in an infant with Kawasaki disease and acute myocardial infarction

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Acute myocardial infarction is the most serious complication of Kawasaki disease and is often fatal.^{1,2} We describe a case successfully treated by intracoronary thrombolysis.

Case report

A 13 month old boy with Kawasaki disease was found to have multiple coronary artery aneurysms 25 days after onset of illness. He was treated with aspirin and dipyridamole but four months later he presented with acute anterior myocardial infarction. Coronary angiography showed occlusion of the proximal left anterior descending artery (LAD), the distal

vessel faintly opacifying through collaterals from the circumflex artery (fig 1A).

Local infusion of urokinase into the left coronary artery (three doses of 5000 U/kg and one dose of 7000 U/kg) was initiated eight hours after the onset of symptoms. The LAD recanalised, but some thrombus remained in the aneurysm (fig 1B). At that time myocardial contrast echocardiography showed contrast in the anterolateral wall of the left ventricle. Thereafter intravenous heparin was given for seven days followed by aspirin and warfarin. Two weeks later echocardiography showed normal ventricular wall motion and thallium scintigraphy showed only a mild anterior wall

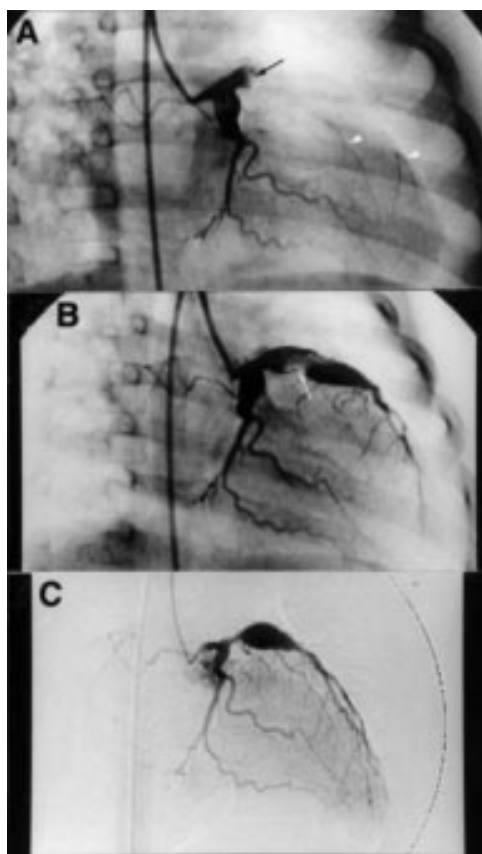


Figure 1 Left coronary artery angiograms (A) before thrombolysis, (B) after thrombolysis, and (C) four months later. (A) the occlusion is shown in the proximal portion of the LAD (arrow) and its peripheral segments are faintly visible through collateral arteries from the left circumflex artery (arrowheads). (B) After reperfusion thrombus (arrow) remained in the aneurysm. (C) The thrombus in the aneurysm has resolved with a decrease in size of the aneurysm.

perfusion defect. Four months later repeat angiography showed the thrombus had completely resolved (fig 1C). The warfarin was stopped after a year and treatment was continued with aspirin and dipyridamole. Two years later the patient remained symptom free.

Discussion

We chose to use intracoronary rather than peripherally administered urokinase because of the need for early and accurate assessment of thrombolysis. Myocardial contrast echocardiography appeared to predict myocardial viability³ as only a small area of ischaemia remained on thallium scan after reperfusion. This myocardial salvage is likely due to a combination of collateral circulation and early intervention with thrombolytic treatment. The complete resolution of thrombus after anticoagulation and antiplatelet agents in this case supports previous suggestions⁴ that this combination therapy may prevent progression of thrombosis within coronary artery aneurysms.

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